

LISTING OF CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A tissue or vessel sealing instrument, comprising:

a housing having a shaft attached thereto, the shaft defining a longitudinal axis; and

an end effector assembly attached to a distal end of the shaft, the end effector assembly including first and second jaw members attached thereto made from a substantially rigid material, at least one jaw member being movable relative to the other jaw member from a first position for approximating tissue to at least one additional position for grasping tissue therebetween;

each of the jaw members including an elastomeric material disposed on an inner facing tissue contacting surface thereof, ~~each of the elastomeric materials~~ material of the first jaw member including ~~[[an]]~~ a first electrode associated therewith, the elastomeric material of the second jaw member including a second electrode associated therewith, each of the electrodes including a planar tissue-contacting surface disposed transverse to the longitudinal axis, ~~the electrodes~~ first electrode and the second electrode being offset a distance X relative to one another, wherein the distance X is transverse to the longitudinal axis, such that when the jaw members are closed about the tissue and when the electrodes are activated, electrosurgical energy flows through the tissue in a generally coplanar manner relative to tissue contacting surfaces and generally transverse to the longitudinal axis, the elastomeric

material being adapted to compress or deflect about 0.001 inches to about 0.015 inches when the force used to close the jaw members is between about 40 psi to about 230 psi; and

wherein the substantially rigid material of the jaw members resists deformation when the force used to close the jaw members is between about 40 psi to about 230 psi.

2. (Previously presented) The tissue or vessel sealing instrument of claim 1, wherein the elastomeric material is selected from the group consisting of at least one of the following materials: silicone, polyurethane, santoprene, nylon, syndiotactic polystyrene, Polybutylene Terephthalate (PBT), Polycarbonate (PC), Acrylonitrile Butadiene Styrene (ABS), Polyphthalamide (PPA), Polyimide, Polyethylene Terephthalate (PET), Polyamide-imide (PAI), Acrylic (PMMA), Polystyrene (PS and HIPS), Polyether Sulfone (PES), Aliphatic Polyketone, Acetal (POM) Copolymer, Polyurethane (PU and TPU), Nylon with Polyphenylene-oxide dispersion and Acrylonitrile Styrene Acrylate.

3. (Previously presented) The tissue or vessel sealing instrument of claim 1, wherein the offset distance X is in the range of about 0.005 inches to about 0.200 inches.

4. (Previously presented) The tissue or vessel sealing instrument of claim 1, further comprising at least one sensor which provides information to a feedback circuit for regulating the electrosurgical energy through the tissue.

5. (Previously presented) The tissue or vessel sealing instrument of claim 4, wherein the sensor measures at least one of tissue impedance, tissue temperature and tissue thickness.

6. (Withdrawn) The electrosurgical instrument of claim 1, wherein at least one of the jaw members includes means for regulating the distance X dependent upon tissue thickness or tissue type.

7. (Previously presented) The tissue or vessel sealing instrument of claim 1, wherein at least one of the jaw members includes at least one electrode across the width thereof and the electrosurgical instrument includes means for selecting one of the electrodes for electrically opposing the electrode disposed on the other of the jaw members, wherein the means includes a sensor which measures at least one of tissue impedance, tissue temperature and tissue thickness.

8. (Previously presented) The tissue or vessel sealing instrument of claim 1, wherein the elastomeric material has a comparative tracking index value of about 300 to about 600 volts.

9. (Withdrawn) The electrosurgical instrument of claim 1, wherein the electrodes are wire electrodes which project from the tissue contacting surfaces of the elastomeric material into contact with the tissue.

10. (Withdrawn) The electrosurgical instrument of claim 1, wherein the elastomeric material on each of the jaw members includes an electrode which is partially disposed therein.

11. (Withdrawn) The electrosurgical instrument of claim 10, wherein upon grasping of tissue between the jaw members, each of the electrodes deflect inwardly relative to the tissue contacting surfaces.

12. (Withdrawn) The electrosurgical instrument of claim 11, wherein the electrodes are recessed within the elastomeric material.

13. (Withdrawn) The electrosurgical instrument of claim 12, wherein the tissue contacting surface of each electrode is substantially crowned.

14. (Withdrawn) An electrosurgical instrument for sealing tissue, comprising:

a housing having a shaft attached thereto; and

an end effector assembly attached to a distal end of the shaft, the end effector assembly including first and second jaw members attached thereto, the jaw members being movable relative to one another from a first position for approximating tissue to at least one additional position for grasping tissue therebetween;

each of the jaw members including an insulative material disposed on an inner facing tissue contacting surface thereof and an elastomeric material disposed between each jaw member and a respective insulative material, each of the insulative materials includes an electrode disposed therein, the electrodes being offset a distance X relative to one another such that when the jaw members are closed about the tissue and when the electrodes are activated, electrosurgical energy flows through the tissue in a generally coplanar manner relative to the tissue contacting surfaces.

15. (Withdrawn) The electrosurgical instrument of claim 14, wherein the offset distance X is in the range of about 0.005 inches to about 0.200 inches.

16. (Withdrawn) The electrosurgical instrument of claim 14, further comprising at least one sensor which provides information to a feedback circuit for regulating the electrosurgical energy through the tissue.

17. (Withdrawn) The electrosurgical instrument of claim 16, wherein the sensor measures at least one of tissue impedance, tissue temperature and tissue thickness.

18. (Withdrawn) The electrosurgical instrument of claim 14, wherein at least one of the jaw members includes a plurality of electrodes across the width thereof and the electrosurgical instrument includes means for selecting one of the plurality of electrodes for electrically opposing the electrode disposed on the other of the jaw members,

wherein the means includes a sensor which measures at least one of tissue impedance, tissue temperature and tissue thickness.

19. (Withdrawn) The electrosurgical instrument of claim 14, wherein the insulative material on each of the jaw members includes an electrode which is partially disposed therein.

20. (Withdrawn) The electrosurgical instrument of claim 19, wherein the electrodes are recessed within the insulative material.

21. (Currently Amended) A tissue or vessel sealing instrument, comprising:

a housing having a shaft attached thereto, the shaft defining a longitudinal axis; and

an end effector assembly attached to a distal end of the shaft, the end effector assembly including first and second jaw members attached thereto made from a substantially rigid material, at least one jaw member being movable relative to the other jaw member from a first position for approximating tissue to at least one additional position for grasping tissue therebetween;

each of the jaw members including an elastomeric material disposed on an inner facing tissue contacting surface thereof, each of the elastomeric materials encompassing an electrode therein, the electrodes being offset a distance X relative to one another such that when the jaw members are closed about the tissue and when the electrodes are activated, electrosurgical energy

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flows through the tissue in a generally coplanar manner relative to the tissue contacting surfaces and transversely perpendicular to the longitudinal axis, wherein the elastomeric material is selected from the group consisting of at least one of the following materials: silicone, polyurethane, santoprene, nylon, syndiotactic polystyrene, Polybutylene Terephthalate (PBT), Polyphthalamide (PPA), Polyimide, Polyethylene Terephthalate (PET), Polyamide-imide (PAI), Acrylic (PMMA), Polystyrene (PS and HIPS), Polyether Sulfone (PES), Aliphatic Polyketone, Acetal (POM) Copolymer, Polyurethane (PU and TPU), Nylon with Polyphenylene-oxide dispersion and Acrylonitrile Styrene Acrylate, the elastomeric material being adapted to compress or deflect about 0.001 inches to about 0.015 inches when the force used to close the jaw members is between about 40 psi to about 230 psi; and

wherein the substantially rigid material of the jaw members resists deformation when the force used to close the jaw members is between about 40 psi to about 230 psi.

22. (Currently Amended) A tissue or vessel sealing instrument, comprising:

a housing having a shaft attached thereto; and

an end effector assembly attached to a distal end of the shaft, the end effector assembly including first and second jaw members attached thereto made from a substantially rigid material, at least one jaw member being movable relative to the other jaw member from a first position for approximating tissue to at least one additional position for grasping tissue therebetween;

each of the jaw members including an elastomeric material disposed on an inner facing tissue contacting surface thereof; the elastomeric material being adapted to compress or deflect about 0.001 inches to about 0.015 inches when the force used to close the jaw members is between about 40 psi to about 230 psi, each of the elastomeric materials including a pocket disposed therein, and each pocket including an electrode disposed therein, the electrodes being offset a distance X relative to one another such that when the jaw members are closed about the tissue and when the electrodes are activated, electrosurgical energy flows through the tissue in a generally coplanar manner relative to the tissue contacting surfaces, wherein the offset distance X is in the range of about 0.005 inches to about 0.200 inches, wherein the offset distance X is configured to result in a substantially uniform temperature distribution between the electrodes after activation of the electrodes; and

wherein the substantially rigid material of the jaw members resists deformation when the force used to close the jaw members is between about 40 psi to about 230 psi.

23. (Currently Amended) A tissue or vessel sealing instrument, comprising:

a housing having a shaft attached thereto, the shaft defining a longitudinal axis; and

an end effector assembly attached to a distal end of the shaft, the end effector assembly including first and second jaw members attached thereto made from a substantially rigid material, at least one jaw member being movable relative to the other jaw member from a first position for approximating tissue to at least one additional position for grasping tissue therebetween;

each of the jaw members including an elastomeric material disposed on an inner facing tissue contacting surface thereof, each of the elastomeric materials including an electrode disposed therein, the electrodes being substantially longitudinally aligned and being offset a distance X relative to one another such that when the jaw members are closed about the tissue and when the electrodes are activated, electrosurgical energy flows through the tissue in a generally coplanar manner relative to the tissue contacting surfaces, the distance X being variable depending on the thickness of the tissue between the jaw members, the tissue-contacting surface of each of the electrodes is flush with a tissue-contacting surface of its corresponding elastomeric material prior to the jaw members being closed about tissue, the elastomeric material being adapted to compress or deflect about 0.001 inches to about 0.015 inches when the force used to close the jaw members is between about 40 psi to about 230 psi; and

wherein the substantially rigid material of the jaw members resists deformation when the force used to close the jaw members is between about 40 psi to about 230 psi.

24. (Previously presented) The tissue or vessel sealing instrument of claim 1, wherein the tissue-contacting surface of each of the electrodes is flush with a tissue-contacting surface of its corresponding elastomeric material prior to the jaw members being closed about tissue.

25. (Previously presented) The tissue or vessel sealing instrument of claim 1, wherein each of the elastomeric materials completely surround its corresponding electrode.

26. (Previously presented) The tissue or vessel sealing instrument of claim 1, wherein the temperature along the tissue contacting surfaces of the jaw members is substantially uniform after the electrodes are activated.

27. (Previously presented) The tissue or vessel sealing instrument of claim 3, wherein the offset distance X is configured to result in a substantially uniform temperature distribution between the electrodes after activation of the electrodes.

28. (New) The tissue or vessel sealing instrument of claim 1, wherein the first electrode is encased within a first pocket, wherein the second electrode is encased

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within a second pocket, wherein the first pocket is disposed within the elastomeric material of the first jaw member, and wherein the second pocket is disposed within the elastomeric material of the second jaw member.

29. (New) The tissue or vessel sealing instrument of claim 1, wherein when the electrodes are activated, electrosurgical energy flows through the tissue in a direction that is transversely perpendicular to the longitudinal axis.